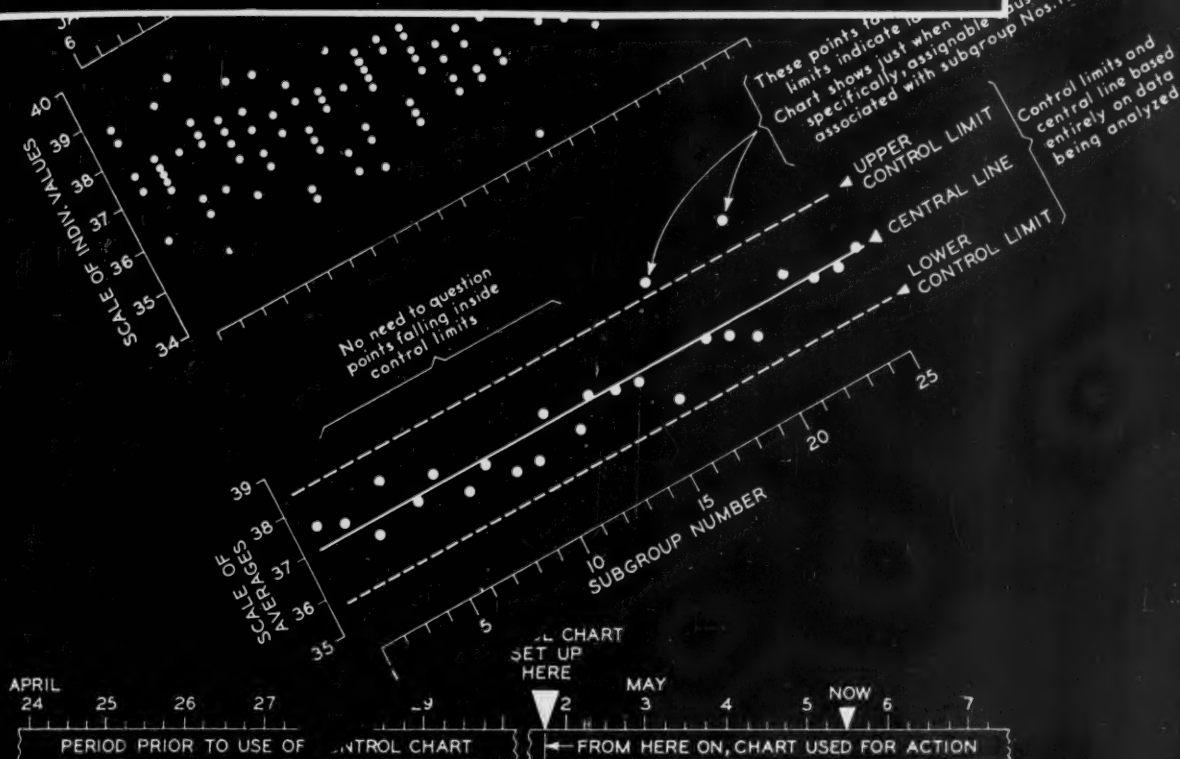


Industrial

Standardization

and Commercial Standards Monthly

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SCALE OF INDIV. VALUES

SCALE OF AVERAGES

June

Quality Control—An Improved Method
(See page 137)

1941

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And Commercial Standards Monthly

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RUTH E. MASON, Editor

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not to stand still, but to move forward together.**

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June, 1941

Vol. 12, No. 6

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Office at New York, N. Y., under the Act of March 3, 1879.

Who Uses the ASA?

THE American Standards Association has created the means by which industry can take the initiative in setting up standards to solve problems through the cooperation of all parties at interest.

It has brought about interchangeability on a national scale of machine elements, such as bolts, nuts, screws, and bearings; of pipe, valves and fittings; and of many tools and machine parts essential to production.

It has brought about a unified set of national standards for motors, wires and cables, and other electrical equipment and supplies; specifications for iron and steel products, non-ferrous metals; and similar standards for many other industries, including building, mining, chemical and wood.

In almost every state industrial establishments operate under American Safety Standards. Ninety per cent of the gas appliances now manufactured and sold meet American standards. Every piece of safety glass in nearly all new cars is etched to show compliance with American Standard specifications. Fifteen years ago the American Standards Association brought about uniformity from coast to coast in the use of colors for traffic signals—green for “go”, red for “stop”, yellow for “caution”. 440 other standards cover products from steel girders to the shrinkage of cotton goods.

Who uses the ASA?

Manufacturers, because they wish to facilitate production operations or lower production costs, or to end disputes between buyer and seller, or to raise the level of their industry by doing away with misrepresentation. Consumer groups, as a yardstick to measure the merit of the things they buy. Government agencies, in their capacity as buyers or as protectors of a segment of public interest.

Quality Control— An Improved Method

ASA Approves Two Defense Emergency Standards for Quality Control Developed under Project Requested by War Department

by John Gaillard

Secretary, ASA Emergency Technical Committee on Quality Control (Z1)

THE Guide for Quality Control and the Control Chart Method of Analyzing Data¹ have been approved by the American Standards Association as American Defense Emergency Standards.

The new standards were developed by an Emergency Technical Committee appointed to handle the ASA project, Application of Statistical Methods to the Quality Control of Materials and Manufactured Products, which was initiated in December, 1940, upon request of the War Department. Members of this committee are:

H. F. Dodge, Bell Telephone Laboratories, *Chairman*
A. G. Ashcroft, Alexander Smith & Sons Carpet Company

W. Edwards Deming, Bureau of the Census
Leslie E. Simon, Ordnance Department, U. S. Army
R. E. Wareham, General Electric Company
John Gaillard, American Standards Association, *Secretary*

The first standard, Guide for Quality Control, is intended as a guide for handling problems concerning the economic control of quality of materials and manufactured products. It has particular reference to methods of collecting, arranging, and analyzing inspection and test records in a manner designed to detect lack of uniformity of quality.

The second standard, Control Chart Method of Analyzing Data, covers the analysis of a collection of data, with particular reference to quality data resulting from inspections and tests of materials and manufactured products. This method pro-

vides a graphical summary of the data that are being analyzed which assists judgment in determining whether there is evidence of lack of control, and whether there is justification in using the summary as a basis for predicting the future performance of the processes that give rise to the data that are being analyzed—the performance, for example, of a production process.

The following will give a general idea of the principles and technique of approaching the quality control problem outlined in the new standards.

Variation of Quality—

In industrial practice, the quality of a product usually is measured in terms of one or more characteristics, each of which is required to meet specified requirements. In the present discussion, when we are speaking of quality, it will be understood, for the sake of simplicity, that we are dealing with a single quality characteristic, such as a dimension of a machine part, the tensile strength of a steel, the blowing time of a fuse, the capacity rating of a motor, etc.

Quality as measured on samples or individual lots of a product is not constant, but varies from sample to sample, or from lot to lot. These variations, which are due to numerous causes, may be divided into two classes on the basis of the following distinction. A variation may be a non-significant one (that is, a variation that merits no investigation) or it may be a significant variation,

¹ Z1.1-1941 and Z1.2-1941. Both standards and an Appendix (Supplement B of the ASTM Manual on Presentation of Data) have been published in one document, available from the American Standards Association at 75 cents a copy.

that is, one that indicates the presence in the production process of an *assignable cause* of variation in the quality of the product—which practically means, a cause of trouble. Such an assignable cause should be identified and removed if the manufacturer is to get “statistical control” of the quality of his product. (The concept “statistical control” will be discussed later.) It depends on the nature of the assignable cause of variation and the cost involved in its removal, whether its elimination is considered practicable.

When Is Variation Significant?—

The question arises: “How do we know if a variation in the quality of the product is significant or, in other words, when does a variation indicate the presence of a cause of trouble in the production process?”

The Guide for Quality Control (Z1.1-1941) shows how the practical answer to this question can be given by a *control chart*. This is a graphical record of quality on which are placed two *control limits* in such a way as to permit us to classify

variations in quality into the two groups just mentioned. To this effect, measurements of the quality characteristic under consideration are made on samples of the product, and for each set of measurements made on the individual units of a sample, a point is plotted on the control chart.¹ If such a plotted point falls outside the control limits, this means that we should look for an assignable cause of variation (cause of trouble) in the production process. But if a certain minimum number of successive plotted points all remain within the control limits, we may reasonably assume that for the time being there is no cause of disturbance. Yet, we must continue to plot points on the chart to watch for any causes of trouble—old or new ones—that may sneak into the production process.

State of Control—

When the assignable causes of variation have been eliminated from the production process to the extent that practically all the plotted points remain within the control limits, the process is said to be in a *state of statistical control*, or briefly, in a *state of control*. This concept of “control” is different from what the manufacturer commonly understands by saying that he has “control” of the quality of his product. To make this difference clear, let us assume that we are dealing with the manufacture of cylindrical pins the diameter of which is to be held within limits specified on the drawing. (Such limits, commonly known in the plant as “manufacturing limits,” are designated in the new standards as “specification limits,” to distinguish them from “control limits”). This diameter, then, is the quality characteristic to be controlled here. Assume further that a control chart is set up and that some points plotted on this chart from measurements made on samples of pins fall outside the control limits. Investigation shows that the trouble is due to temperature changes in the workshop. An assignable cause of variation has thus been identified and if the manufacturer wants to attain statistical control this cause must be removed.² Will he proceed to remove it?

The answer depends largely on the limits that have been specified for the diameter. If the temperature changes cause the pins to exceed these limits, the manufacturer will realize that he must correct the situation if he is to get “control” of the sizing of the pins. He will see this point even

What the Quality Control Standards Cover

Guide for Quality Control Z1.1-1941

1. Scope
2. The Control Chart
3. Specification Limits
4. Control Limits
5. Variation of Quality. Assignable Causes
6. State of Control
7. Practical Advantages of a State of Control
8. Establishment of Control Limits
9. Principal Uses of the Control Chart
10. Use of the Control Chart for Judging Whether Control Exists
11. Use of the Control Chart for Attaining Control of Quality
12. Cooperation between the Technical Man and the Statistician

Control Chart Method of Analyzing Data Z1.2-1941

1. Scope
2. Nature of the Data Used
3. Computation of the Statistical Measures
4. Types of Control Charts
5. Construction of a Control Chart
6. General Instructions for Control Chart Method
7. Choice of Control Limits

¹ The way in which control limits are placed, and points plotted on the control chart is described in Control Chart Method of Analyzing Data (Z1.2-1941).

² The remedy may consist, for example, in having the finishing operation on the pins performed in a temperature-controlled room.

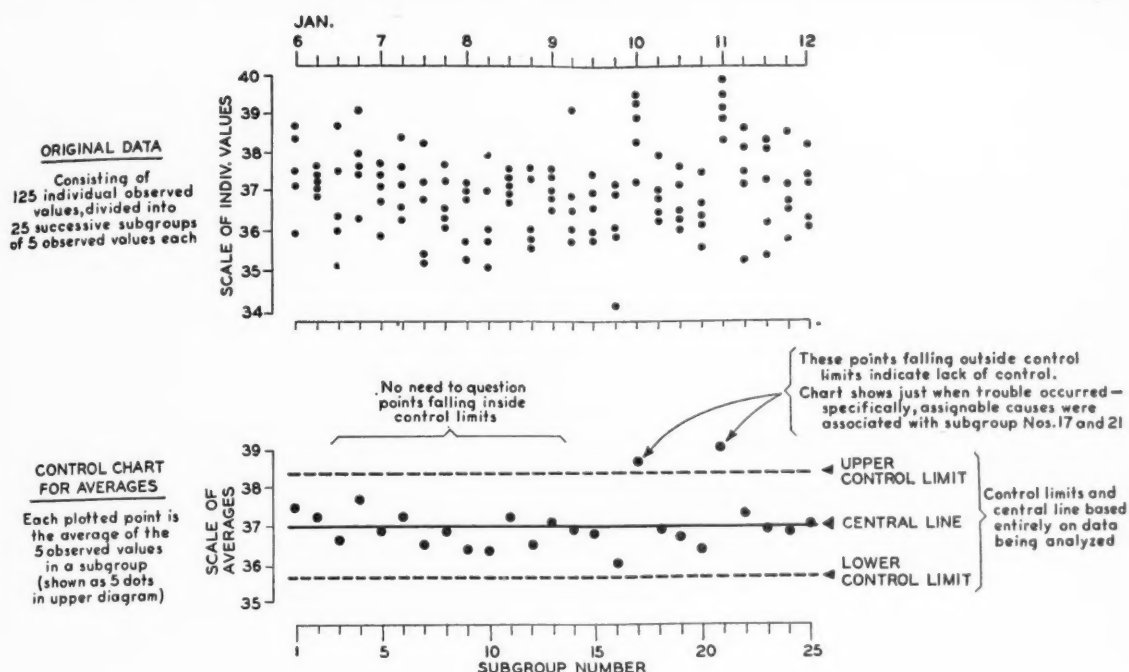


Fig. 1.

Illustrating Features of the Control Chart as Used for *Analyzing* a Set of Data to Determine Whether There Has Been Lack of Control

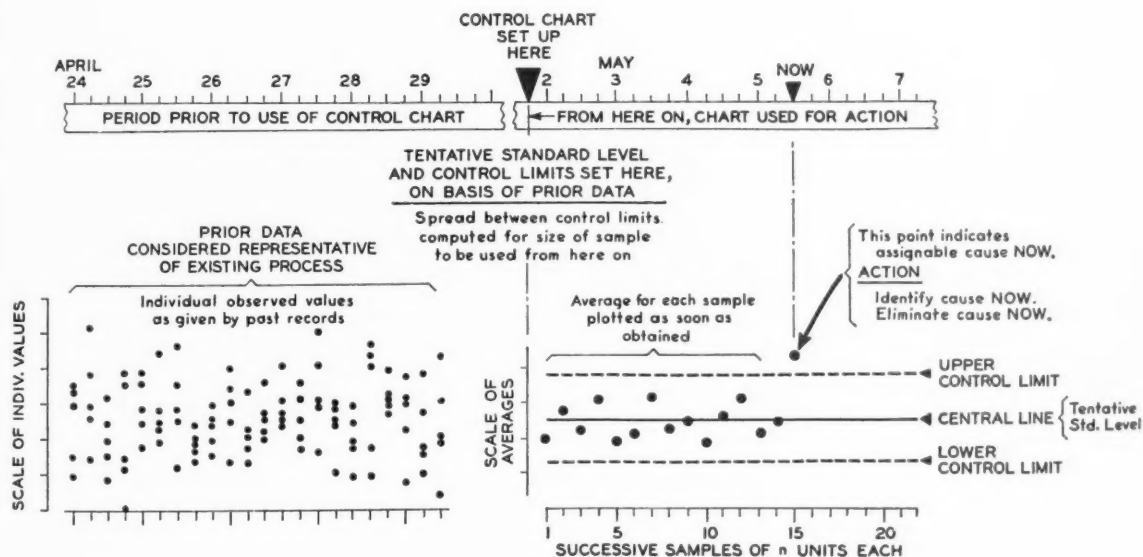


Fig. 2.

Illustrating Features of the Control Chart as Used for *Controlling* Quality During Production. (This is a control chart for *averages*; each plotted point is the average of the n individual observed values for the n units in a sample)

though he has never heard of "assignable causes," or "statistical control." However, if the specification limits are so wide that variations in size due to temperature changes may be neglected, the manufacturer will see no reason for the elimination of the cause of these variations. If there are no other causes of disturbance, he will judge that he has the sizing of the pins "under control." This kind of control may be satisfactory to the manufacturer, yet, since he fails to remove an assignable cause of variation, he has *not* attained "statistical control."

Control Limits Used for Action—

Does this mean that the control limits are of no value to him or, in other words, that the specification limits are the only ones that should interest him? Not at all. The control limits, by indicating the probable presence of assignable causes of variation call his attention, not only to *actual* trouble, but also to *potential* trouble—something that specification limits fail to do. For example, such causes of variation as tool wear, looseness in a machine spindle, or again, flaws in a lot of material received, may create a disturbance whose influence grows with time and at a given moment will bring the quality of the product outside its specification limits. Control limits, together with the points plotted against them, will call the manufacturer's attention to such a situation while it is developing. Therefore, the manufacturer often is able to make the necessary correction before the quality of the product gets outside its specification limits. Without the use of control limits, he would find out that something has gone wrong only after the specification limits have been exceeded—that is after the disturbance has increased and product has had to be rejected by the inspection department.

From the above it appears that an important function of control limits is to call attention to the presence of a cause of trouble *as soon as it arises*, so that the manufacturer can at once *take action* to remove it. The Guide for Quality Control designates this use of control limits as *action limits* as their "ultimate and most important purpose". Also, a control chart thus used is most effective when kept at that point in the production process which is closest to the potential sources of trouble. The need for corrective action will then be indicated with a minimum of delay.

Control Limits Used for Judgment—

If action limits are to be applied to a production process for the first time, it will usually be necessary to get a picture of the past history of the quality of the product. For example, the

manufacturer will want to know if the production process as performed so far, has been in a state of control. In such a case, he can use the control chart for analyzing quality records of the past (see Z1.2-1941), control limits being adopted here on the basis of measurements made on units or test specimens of product already made. These limits, in combination with the plotted points, will show whether there was lack of control during the past period of operation that is being reviewed.

It is not only in reviewing the past history of quality by the manufacturer that a control chart is thus used in *judging* whether there was lack of control. Control limits may be used in this way also to assist the purchaser of supplies in judging whether the manufacturer has his product under control. If so, the manufacturer may submit evidence of this fact to his customer by showing the latter the chart records kept in the factory for attaining control. This should give the customer greater confidence in the reliability of the manufacturer's production process than could be based on any results of the customer's own sampling and inspection of supplies received. In fact, if the manufacturer is to have control, he must regularly sample and inspect his product and remove any causes of trouble that arise. If this is done, and the customer is willing to accept the supplier's quality records as evidence, the customer will find it superfluous to do the same thing over again—all he may need here is a periodic check test to satisfy himself that the supplier still appears to have control. Standardization of the control chart method will help to create a common language for the two parties—supplier and customer—to understand each other in regard to guarantee of quality.

Illustration of Two Uses of Control Chart—

Figures 1 and 2 reproduced here from the Guide of Quality Control (Z1.1-1941) illustrate the two principal uses of the control chart. Its application to the analysis of quality data—that is, use of the control chart for the *judgment* of control—is shown first because this application usually precedes the use of the chart for *attaining* control. In the standard, Control Chart Method of Analyzing Data (Z1.2-1941), the use of control limits for judging control is dealt with in detail. This standard also contains three Instruction Sheets showing the reader how to construct control charts for different measures of quality, such as the average, the range, the standard deviation, and the fraction defective.³

³ In Fig. 2 the *average* of the observed values obtained from the units contained in each sample inspected is used as the measure of quality.

Importance of Standards to Industry—

The new standards on Quality Control are of importance to all branches of industry—particularly to those using repetitive production methods. The use of the control chart technique can be helpful to manufacturers in minimizing inspection, reducing the percentage of rejections, preventing stoppages in the production line, clarifying transactions with suppliers, and in general, in providing manufacturers with a trouble detector that gives warning of disturbances in the production process or even of conditions that threaten to develop into disturbances.

Use of Chart Is Simple—

While the control chart method has a statistical background, the new standards make its application simple. The ASA committee that developed them has taken special pains to avoid unnecessary statistical terminology so that the pamphlet may serve as a guide for the practical man in charge of quality of product in the manufacturing plant, or responsible for the quality of supplies received from the outside.

Deserves Attention of Executives—

It is recommended that the new ASA pamphlet be given serious attention by executives in all manufacturing industries and that they take the initiative in starting a quality control system in which the technique outlined in the new standards is applied. The latter's value should be increased by the stringent requirements of the present national emergency, involving the manufacture of enormous quantities of products made by repetitive methods and demanding refined quality control; the need of getting the most out of all materials, methods and machines; the reliability required in matters of quality in transactions between government contractors and their numerous subcontractors; and finally, the urgency for executives to avail themselves of every possible tool of management that will facilitate the conduct of their affairs under the present high pressure. In all of these respects, the modern approach to the quality control problem, as outlined in the new standards, can render services to American industry not available in any other way.

Recently Published Federal Specifications

Many new specifications are being established by the Federal Government. Those listed below have just been announced and may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C. at five cents each, with the exception of ZZ-R-601a, the price of which is 15¢ each.

- Brushes; scrubbing, clothes. (Amendment-2) H-B-521 June 15, 1941
- Cans; oil (kerosene). (New) RR-C-85 Apr. 1, 1941.
- Cards; tabulating. (New) G-C-116 June 15, 1941
- Cleaners, vacuum; electric, portable. (Superseding W-C-621) June 15, 1941
- Colanders, bakers'; corrosion-resisting-steel. (Amendment-1) RR-C-526 June 15, 1941
- Colanders, corrosion-resisting-steel. (Amendment-1) RR-C-531 June 15, 1941
- Cookers; steam-pressure. (Amendment-1) RR-C-561 June 15, 1941
- Covers, cake; corrosion-resisting-steel. (Amendment-1) RR-C-611 June 15, 1941
- Impression-material; hydrocolloidal, dental. (New) U-1-496 May 1, 1941
- Labels; microslide. (New) G-L-41 May 1, 1941
- Linoleum; plain, inlaid, and printed. (Amendment-3) LLL-L-361 June 15, 1941
- Oakum; marine. (New) T-O-56 June 15, 1941
- Oats; rolled or flaked. (Superseding N-O-41) N-O-41a June 15, 1941
- Packing; jute, twisted. (New) HH-P-117 June 15, 1941
- Pans, dish; corrosion-resisting-steel. (Amendment-2) RR-P-66 June 15, 1941
- Pans, fry; corrosion-resisting-steel-clad (3-ply). (Amendment-2) RR-P-86 June 15, 1941
- Pans, sauce; corrosion-resisting-steel-clad (3-ply). Amendment-1) RR-P-111 June 15, 1941
- Paper; kraft, wrapping, paraffined. (Amendment-2) UU-P-270 June 15, 1941
- Perforators; paper, desk. (Superseding GG-P-191) GG-P-191a July 1, 1941
- Pins; safety. (New) FF-P-416 May 1, 1941
- Pipe; cement-asbestos. (Amendment-1) SS-P-351 June 15, 1941
- Plumbing-fixtures; for land use. (Formed-metal plumbing-fixtures). (New) WW-P-542 May 15, 1941
- Receptacles (convenience outlets); attachment-plugs, current-taps and connectors. (Amendment-2) W-R-151 June 15, 1941
- Rubber goods; general specifications (methods of physical tests and chemical analyses). (Superseding ZZ-R-601) ZZ-R-601a Mar. 1, 1941
- Tars; (for use in) road construction. (Superseding R-T-101, R-T-121, R-T-126, R-T-131, R-T-136, and R-T-141) R-T-143 Apr. 1, 1941

The date opposite each title above is the date on which the specification becomes effective.

The British Standards Institution Describes Its Role in Wartime

*(From a statement released to the press
by the BSI March 31, 1941)*

SOME months before the outbreak of war the British Standards Institution, which is the recognized center for the promulgation of all national British Standards, offered HM Government the services of the Institution, as a complete unit, in the national emergency. This offer, which was sent to the Board of Trade through whom the BSI receives its Government Grant,¹ was most cordially received and the various Departments of State were duly informed of the proposal.

On the outbreak of war the BSI realized that its peacetime procedure was inadequate to deal effectively with the demands imposed by the changed conditions, and especially by the need for rapid action. A number of small executive committees were therefore set up for the various sections of its work, these being made fully responsible for the preparation of any War Emergency Specifications the Institution might be called upon to undertake. Under this emergency procedure the executive committees were given authority to restrict the usual wide consultation of industry to those interests directly concerned, and the reduction of the time usually given for comment on draft standards. It is, of course, understood that any British Standards issued under wartime procedure will come under review directly peace comes again.

Government Departments Use BSI

Government Departments are employing the BSI machinery for the preparation, co-ordination, and promulgation of War Emergency Specifications to meet their several requirements, that policy being adopted because of the great experience of the Institution in this field and because it provides a most effective liaison be-

tween them and almost all branches of British industry.

The BSI is invited to send a representative to appropriate meetings of the Materials Committee of the Production Executive, which is representative of all Government Departments, the Central Priority Department acting as the liaison between that Committee and the Institution. This has brought the BSI in close contact with the increasing number of Departments working to specifications, and is thereby bringing about a considerable measure of co-ordination in their preparation and issue.

Maintains Contact with Dominion Groups

This war work has in no way prevented the BSI from maintaining its usual close relationship with the Dominion standardizing bodies, which have been kept in close touch with these developments.

Moreover, the BSI Committee in the Argentine Republic, which is working in close collaboration with the IRAM, the Argentine national standards organization, is receiving increased recognition as its work is seen to be of real value to British export trade. British engineers and traders in the Argentine are to a greater degree giving practical support to the work of the Committee, and manufacturers in Great Britain have, by a far-sighted policy of financial support, made that work possible. British Standards, through the work of this Committee, are receiving the same consideration at the hands of the IRAM in the drawing up of Argentine standard specifications as the standards of other nations.

The BSI with the help of the British Council and of industry, is also engaged in compiling a number of technical handbooks dealing with British industrial practice. The books are to be published in Spanish and Turkish and should do much to familiarize engineers and students in Turkey and the Spanish-speaking countries with British methods.

¹ Although industry contributes the larger share of the British Standards Institution's financial support, some £33,000 per year, the BSI also receives an annual grant of £3,000 from the British Government.



Courtesy Westinghouse Elec. & Mfg. Co.

Part of the assembling operations for watt-hour meters

The revised code provides standard practice for manufacture, installation, and testing of electrical meters

Revision Brings Code for Electricity Meters Up-to-Date

by H. B. Brooks¹
and
W. C. Wagner²

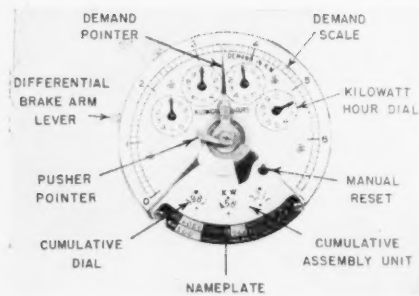
THE need for uniform procedure to assure the most economical manufacture of standard metering equipment and more uniform installation and test methods has resulted in the present revision of the Code for Electricity Meters, the fourth edition. This edition, providing up-to-date standard requirements for metering, including measurements of generation, interconnection, and the like, and of quantity of electrical energy consumed in homes, business places, and factories, was approved as an American Standard by the American Standards Association May 5, 1941.

The Code provides standard practice for the manufacture, installation, and testing of electricity meters, and is considered the fundamental authority on all matters relating to watt-hour

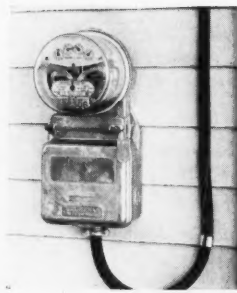
meters and demand meters. It covers definitions, standards, specifications for the acceptance of meters and auxiliary apparatus, installation methods, test methods, and laboratory and service tests. Utility commissions, testing laboratories,

¹ National Bureau of Standards; member of ASA Sectional Committee on Code for Electricity Meters (C12).

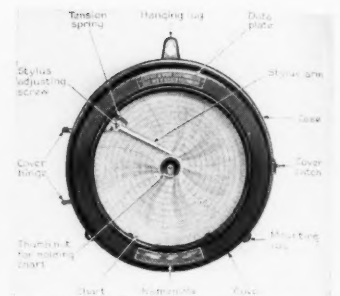
² Philadelphia Electric Company; member of ASA Sectional Committee on Code for Electricity Meters (C12).



Cumulative Demand Meter



Watthour Meter



Courtesy Edison Electric Institute.

Graphic Demand Meter

Types of meters covered by the new Code for Electricity Meters

and producers and users of meters refer to this Code to determine meter performance and characteristics.

The new edition was prepared as the result of changes and improvements in meters during the 13 years since the Code was last approved by the ASA in 1928. In preparing the revision, efforts of the committee were directed toward developing economic standards of performance and operation, and to maintaining standards of performance justified by the conditions involved as shown in the detailed discussion of the work of the subcommittees below.

The first edition of the Code for Electricity Meters was prepared between 1908 and 1910 by the Electrical Testing Laboratories under instructions of the Joint Meter Committee of the Association of Edison Illuminating Companies and the National Electric Light Association. The first four original sections were completed in 1909 and five additional sections were completed in 1910. These, together, represent the first formal edition of the Code, which was published in 1910. The purpose of this first edition was described as being "to produce a reliable and up-to-date manual covering the many phases of electric meter practice as encountered by all companies both large and small." The committee stated it to be its belief that such a code, if intelligently prepared, would prove of great value, not alone to those actually engaged in operating meters, but also to those interested in the practice of metering from other standpoints, namely, official, legal, etc.

Recommended as Reference Book

"It is hoped," the Preface to the first edition states, "that it may find its place among the reliable books of reference in the hands of those responsible for, and interested in, the purchase, installation, and operation of electric meters."

The second edition was published in 1912, and included the first edition with revisions and corrections. This edition represented the completed work as originally planned by the committee.

In 1922 the Code was adopted as an American Standard by the American Engineering Standards Committee (now the American Standards Association). Work on the next revision was started under the procedure of the American Engineering Standards Committee, under the joint sponsorship of the National Bureau of Standards, the Association of Edison Illuminating Companies, and the National Electric Light Association. A sectional committee was organized in December 1923, and the revision was completed and approved as an American Standard in 1928. This edition was the first to include a section on Demand Meters.

The present (fourth) edition has been completely revised by a sectional committee which was organized in October 1938. It was prepared under the joint sponsorship of the National Bureau of Standards, and the Electric Light and Power Group. Dr. J. Franklin Meyer of the National Bureau of Standards is chairman of the sectional committee, and his untiring efforts contributed largely to the completeness and adequacy of the revision.

The detailed work of revision was handled by six subcommittees. Each subjected the sections assigned to them to a close scrutiny to determine necessary revisions to meet advances in the metering art in the last decade. New material was added where necessary, and some material which is now adequately covered in the recently published Handbook for Electrical Metermen was deleted.

Section 1 covering General Definitions is a revision by a subcommittee under the direction of Professor R. D. Bennett, chairman, with the assistance of P. G. Elliott, W. H. Fellows, E. E. Kline,

W. H. Pratt, Dr. H. B. Brooks, and Professor R. E. Johnson. In addition to the basic definitions of units, technical terms and related definitions of interest to metermen have been added. All conform to definitions in the American Standard Definitions for Electrical Terms which has just been approved by ASA Sectional Committee C42.

Section 2 on Standards, including Primary, Secondary, and Working Standards, is a revision by a subcommittee under the direction on Dr. H. B. Brooks of the National Bureau of Standards, chairman, with the assistance of A. S. Albright, W. M. Bradshaw, F. E. Davis, Jr., F. C. Holtz, H. C. Koenig, and G. R. Sturtevant. Here the National Bureau of Standards continues to be recognized as the final authority in the United States on primary standards. In revising this section and in line with present practice, the use of standard watt-hour meters as secondary standards for testing working standards has been recognized.

Section 3 on Measurement of Power and Energy, including Power Factor, is a revision by the same subcommittee which revised Section 2. This section has been completely rewritten to cover more completely the various measurements on different types of metering circuits in present-day practice.

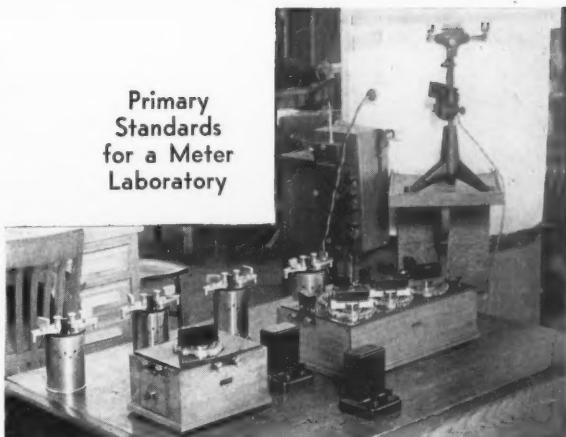
Section 4, Specifications for Acceptance of



Courtesy Westinghouse Elec. & Mfg. Co.

Here watt-hour meters on the assembly line are calibrated at stroboscopic calibrating stations

Primary Standards for a Meter Laboratory



The Code provides that primary standards used by a meter laboratory should include standard cells, resistors, potentiometer, and volt boxes of suitable ranges, as shown here. A precision galvanometer is also included here

Types of Electricity Meters, is a revision by a subcommittee under the direction of W. C. Wagner, chairman, with the assistance of W. M. Bradshaw, Dr. H. B. Brooks, A. B. Craig, W. R. Frampton, E. E. Hill, H. C. Koenig, R. H. Nexsen, and W. H. Pratt. In this section considerable thought was given to the revision of test procedures to include modern self-contained meters having an extended load range. The test specifications are applicable to the most modern types, and also to those older meters whose performance is satisfactory for the load ranges for which these meters were designed. Material has been added to include tests of all multi-element meters and also of meters designed for specific types of service, for example for three-phase four-wire delta circuits.

Section 5, on Specifications for Acceptance of Types of Auxiliary Apparatus, including all instrument transformers for use with meters, is a revision by the same subcommittee that revised Section 4. In this section American Standard definitions pertaining to auxiliary equipment have been added, and definitions and test procedures have been coordinated with the Proposed American Standards for Transformers, Regulators, and Reactors and the Proposed American Recommended Practices for Test Code for Transformers, Regulators, and Reactors (C57).³

Section 6 on Installation Methods relating to location, selection, and wiring of meters is a

³ Copies of these proposed standards, now out for a period of trial, are available from the American Standards Association at 75 cents.

revision by a subcommittee under the direction of O. K. Coleman, chairman, with the assistance of A. P. Good, S. S. Green, C. B. Hayden, N. S. Meyers, and L. D. Price. This section has been condensed by eliminating material now included in the Handbook for Electrical Metermen. Material on outdoor meter locations has been added to meet present-day conditions.

Section 7 on Watthour Meter Test Methods is a revision by the same subcommittee as Section 6. Here, too, the material now included in the Handbook for Electrical Metermen was not retained in the Code. New items on present practices in this field have been added. Stroboscopic and automatic test equipments are covered and the advantages of the standard-watthour-meter methods of test are recognized.

Section 8 on Laboratory and Service Tests including accuracy requirements and laboratory and field tests has been entirely rewritten by a sub-

committee under the direction of P. L. Holland, chairman, with the assistance of J. S. Cruikshank, P. G. Elliott, J. H. Goss, E. E. Hill, J. C. Langdell, and F. L. Pavey. In this section the excellent history of sustained accuracy performance of alternating-current meters in service has made possible revisions in the suggested test schedules for periodic tests.

Section 9 on Demand Meters including acceptance, laboratory, and service tests has been completely rewritten by a subcommittee under the direction of A. J. Allen, chairman, with the assistance of F. C. Holtz, R. E. Johnson, E. A. LeFever, R. H. Nexsen, A. R. Rutter, W. C. Wagner, and H. M. Witherow. Advances in the demand metering art have resulted in much new material. Suitable tests for all types of demand meters are included.

The entire work was coordinated by an editorial committee consisting of Dr. J. Franklin Meyer, chairman, and Dr. H. B. Brooks, P. L. Holland, F. C. Holtz, and W. C. Wagner. Dr. Brooks contributed largely in assisting Dr. Meyer and by personally reviewing the entire work in a very painstaking manner both in the final manuscript form and in the final proofs.

The new Code fills a very definite economic and technical need of those concerned with this important branch of the electrical industry. In its present form it is particularly adapted to serve public service regulatory bodies, as it has achieved a practical balance between technical and commercial considerations. It is therefore hoped that the Code may be generally adopted, to assure the necessary uniformity in the manufacture of metering equipment, and corresponding uniformity of metering practices, in order to best serve the nation at large.

It is noteworthy that all committee actions involved in this and past revisions have been unanimous, indicating the soundness and stability over the years in the development of the metering art.

All substantially interested organizations were represented on the sectional committee which revised the Code for Electricity Meters (C12-1941). Members of the committee are:

J. Franklin Meyer, National Bureau of Standards, *Chairman*

H. C. Koenig, Electrical Testing Laboratories, *Secretary*

National Bureau of Standards, *H. B. Brooks; J. Franklin Meyer*

American Institute of Electrical Engineers, *R. E. Johnson; R. D. Bennett*

Association of Edison Illuminating Companies, *W. C. Wagner; E. E. Hill*

Department of Public Utilities, *N. S. Meyers*
Edison Electric Institute, *A. J. Allen; O. K. Coleman; J. O'R. Coleman (alt)*

Electrical Testing Laboratories, *H. C. Koenig*

National Electrical Manufacturers Association, *W. H. Pratt; W. M. Bradshaw; F. C. Holtz; Stanley S. Green*

Public Service Commissions, *P. L. Holland; C. B. Hayden; R. H. Nexsen*

The Code, which was revised by this committee working under the joint sponsorship of the National Bureau of Standards and the ASA Electric Light and Power Group (the Association of Edison Illuminating Companies and the Edison Electric Institute), has been published by the Edison Electric Institute. Copies are now available at \$2.00.

New Foreign Standards

The American Standards Association has received three new foreign standards and will be glad to lend copies to ASA members.

Australia

Approval and Test Specification for Apparatus Connectors (C109-1941)

Canada

Construction and Test of Power-Operated Radio Devices, Conductively Coupled (Transformerless) Type. (C22.2 — No. 1(B) — 1941)

Great Britain

A.I.D. (Aeronautical Inspection Directorate) Inspection Instruction Leaflets



American Standard southern pine poles being loaded on trams for treatment

Tentative Standards for Wood Poles Become Approved American Standards

THE six American Tentative Standards covering specifications for wood poles, several of which were approved by the American Standards Association as tentative in 1931 and the rest in 1933, have now been reviewed by the ASA committee and approved by the ASA as full American Standards. In reviewing the standards, the committee found that the general principles of the standard requirements have been universally recognized as a satisfactory basis for the selection of poles. Covering as they do northern white cedar poles, western red cedar poles, chestnut poles, southern pine poles, lodgepole pine poles, and Douglas fir poles, the standards represent a rational uniform standardization system for the six major pole timbers of the United States.

The standards establish practical limits that can be applied economically in the production of poles for general use, but they are intended also to be flexible enough to cover the purchase of poles of high quality for special purposes. At the same time, it is not desired that they should

by
Richard C. Eggleston¹

be so restrictive that any considerable quantity of usable poles produced under normal production practices would be labeled substandard because of the specification restrictions.

The standard specifications include material requirements for shape and straightness of grain, limit defects such as knots, checks, insect damage and decay, and define the minimum quality of acceptable poles. In the standards, departures from straightness are held within practical limits for ordinary use. Decay and the presence of

¹ Bell Telephone Laboratories, New York; member of ASA Sectional Committee on Wood Poles (05).



American Standard western red cedar poles being given butt treatment

wood-rotting fungi are generally prohibited. Definite limitations on knots are set, and fire-killed poles are acceptable only by special agreement between producer and purchaser.

Dimensions Based on Fiber Stresses

The standard dimensions now included with the specifications in one standard for each type of pole, were based on recommended fibre stresses contained in the American Standard for Ultimate Fiber Stresses of Wood Poles (05a-1930). They were approved as American Standards from their inception, and until they were included with the specifications in the present American Standards they were considered as separate standards. These standard dimensions have all been prepared according to the same principles for all types of poles. The sizes at six feet from the butt in all six standards have been so fixed with respect to ground-line resisting moments, that, for any given class and length of pole, all six species are equal in strength. In calculating these six-feet-from-butt sizes, distance from the butt to the ground line for any given pole was assumed, by definition, to be as shown in the column in the tables headed "Ground Line Distance from Butt." The equality-in-strength

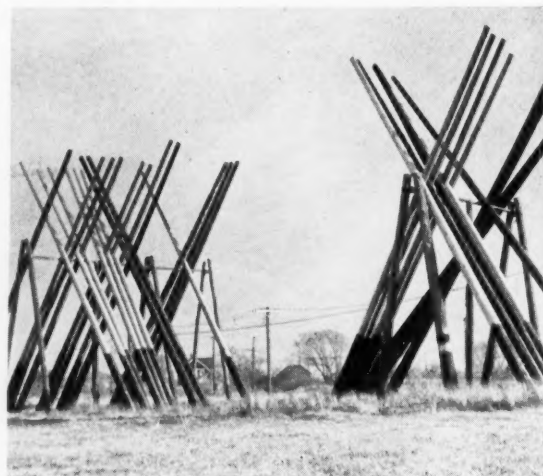
principle holds good, however, for any reasonable depth of set required.

Approval of the six standards at this time followed a policy adopted by the Standards Council of the American Standards Association in April, 1939. At that time the Standards Council decided to withdraw approval of standards having a tentative status, and requested the reconsideration of such standards with the idea of either discarding them or of advancing them to American Standards.

Committee Voted Unanimously

In compliance with this action by the Standards Council, a meeting of the Sectional Committee on Wood Poles was held in New York May 20, 1940, at which the members and alternates present voted unanimously to recommend advancing the six existing American tentative specifications for wood poles to the status of American Standards without revision at this time. Subsequently, the entire membership of the committee voted affirmatively on this recommendation by letter ballot. Accordingly, in November, 1940, the Telephone Group, the sponsors, recommended to the American Standards Association the advancement without revision of the six American Tentative Standard specifications to the status of American Standards.

In January, 1941, the Electrical Standards Committee of the Standards Council submitted the question of the advancement of the specifications to the Council with a recommendation for favorable action; and on March 14, 1941, the American Standards Association approved the speci-



American Standard western red cedar poles stored in racks at an eastern light and power company pole yard

cations as American Standards and redesignated them as follows:

American Standard Specifications and Dimensions for Northern White Cedar Poles (05.1-1941)

American Standard Specifications and Dimensions for Western Red Cedar Poles (05.2-1941)

American Standard Specifications and Dimensions for Chestnut Poles (05.3-1941)

American Standard Specifications and Dimensions for Southern Pine Poles (05.4-1941)

American Standard Specifications and Dimensions for Lodgepole Pine Poles (05.5-1941)

American Standard Specifications and Dimensions for Douglas Fir Poles (05.6-1941)

Copies of the new edition of these standards may be ordered from the American Standards Association at 20 cents per copy.

Defense Demands Increase Specification Difficulties

The problems a manufacturer faces in meeting specification requirements while manufacturing defense items are called to our attention in a recent article in *Automotive Industries*.¹

"Unless a manufacturer is unusually well acquainted with the rigid government specifications, he faces trouble," the article declares. "He must know the requirements for material; he must know what is expected in heat treatments; he must be sure he can produce the tolerances and finishes called for; he must study carefully the need for additional machine tools and manufacturing equipment, jigs, dies, and fixtures; and he must realize the hazards of the very severe inspection. . . .

"An item which foundered many an able and long-established manufacturer during the last war was rejects. The government inspector has nothing to gain but everything to lose if he passes substandard parts. He is compelled by departmental regulation and requirements to be supercritical. The manufacturer must know what inspection gages and instruments are going to be used by the government inspector. He should, to play safe, buy and put into use duplicate equipment and put his product through the required testing procedure if he is to hold his rejections to a minimum."

¹"Back to Business—Government Business," by Leslie Peat. *Automotive Industries*, November 15, 1940.

Increase in Industrial Accidents Shows Need for Safety Standards

A special argument for the use by industry of the American Standard accident prevention signs as well as all other American Standard safety requirements is found in reports published during the past month that deaths from industrial accidents increased 7 per cent during the first two months of 1941 over a similar period in 1940. According to National Safety Council reports, the over-all accident frequency rate increased 16 per cent in the first two months of this year. This means, it is explained, an increase of 1-in-6 in accidents measured in relation to the man-hours worked, or total exposure.

One of the main reasons for this high increase in percentage of accidents is the number of new and inexperienced workers and older workers who have been unemployed for some time and who are now entering industrial employment, it is explained.

"Safety work is currently being pushed, on the general line of reasoning that lost man-hours in the factory may mean lost battles in the field," *Business Week*, May 3, declares. "The U.S. Division of Labor Standards is on record that labor stoppage through work injuries is today largely a small plant problem. The Department of Labor has accordingly developed a plan under which any industrial unit engaged upon government contracts can, without cost, have the technical services of accident prevention experts borrowed from industries with notable safety records."

A list of American Standards, including all approved American Standard safety requirements, can be obtained without charge from the American Standard Association.

Griffiths Represents Tool Engineers On Mechanical Standards Committee

E. Griffiths, Director of Time Study and Methods Department, Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa., has been named by the American Society of Tool Engineers to serve as the Society's alternate representative on the Mechanical Standards Committee of the American Standards Association. Mr. Griffiths succeeds C. J. Oxford, and will serve as alternate for E. W. Ernest, representative of the ASTE.

The Mechanical Standards Committee coordinates all of the work on mechanical standards under the procedure of the American Standards Association.

FTC Rules on Standards And Labels for Hosiery

Minimum standards and rules for labeling all types of men's and women's hosiery with the exception of nylon have just been issued by the Federal Trade Commission to take effect July 15, 1941. The labels are to appear on the hosiery when they are offered for sale to the over-the-counter buyer, and it is an unfair trade practice, the FTC rules, to remove, change, or deface them.

The terms "silk," "wool," "reprocessed wool," "reused wool," "rayon," "cotton," "linen," and "flax" have all been defined to control the use of these terms on hosiery labels. Minimum twist requirements are included for the different weights of hose, two-thread, three-thread, and four-thread, for example.

All fibers used in the hosiery must be named on the label, in the order of their predominance by weight. If a fiber which is present in an amount not exceeding 5 per cent by weight is named, the percentage must be shown. The percentage must also be shown in all cases where failure to do so would tend to deceive the buyer. However, where there would be no deception if the percentage were omitted, the FTC recommends that it be shown but does not require it.

Must Show Metallic Weighting

Any metallic weighting of silk hosiery must be shown on the labels, together with the proportion or percentage. For example, when the hose is made throughout of silk with 25% weighting, such labels would read: "Silk, Weighted 25%," or "Silk with 25% Metallic Weighting," or "Silk, Weighted up to 25%."

Hosiery made of silk noil, which is defined as "waste silk produced in the operations incident to the manufacture of spun silk," must carry a label to that effect.

The term "ringless" can no longer be used un-

less the hosiery has actually been manufactured by the "ringless" method, the Federal Trade Commission provides.

Even sizes of hosiery are included in the Federal Trade Commission rulings. The Commercial Standard for Hosiery Lengths and Sizes, CS46-40, is recognized as the proper method to follow in determining measurements and sizes of hosiery, and the marking of hosiery as to size "shall represent the true and normal size of such hosiery." It is an unfair trade practice, the ruling declares, "to alter the true and normal size of hosiery by stretching or manipulation in a manner deceptive to the purchasing or consuming public."

Manufacturers Approve Roles

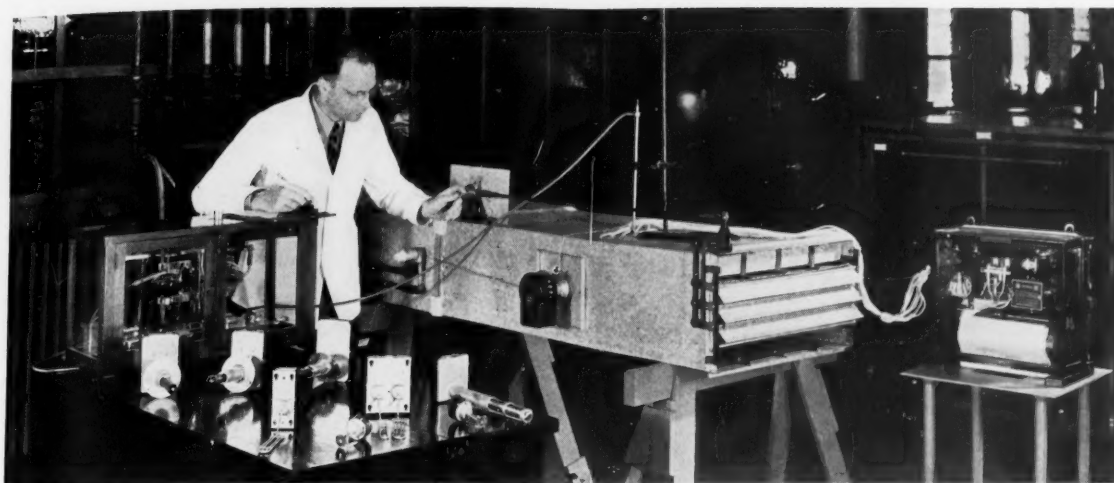
"The larger and more reputable hosiery manufacturers . . . now generally approve FTC's rules," *Business Week* declares in its May 24 issue. "The code requires, among other things, that stockings marked 'cotton-lisle' must be made of long-staple combed cotton, with a minimum twist. Crepe hosiery must be manufactured of silk yarn, also of a minimum twist. Fudging on both these points by less reputable manufacturers has troubled the industry for a long time."

"The main point cleared up at the November hearings (held by the FTC preliminary to promulgation of the hosiery rules) was the labeling of 'irregulars,'" *Business Week* explains. "FTC's requirement that both stockings in a pair be labeled separately is aimed chiefly at those who hoped to take two pairs of irregulars, seconds, or thirds, match up the unlabeled stockings, and sell them for firsts. In the past, many retailers—including some of the biggest in the country—have reportedly offered manufacturers premiums of 25 to 30 cents a dozen for not labeling irregulars."

Argentine Standards Official Visits United States

Ing. Patricio Plante, vice-president of the Instituto Argentino de Racionalization de Materiales, is visiting the United States and the American Standards Association as a representative of the IRAM, Argentine national standardizing body. In addition to his position in IRAM, Mr. Plante is also a member of the Comision Nacional de Uniformacion de Materiales (National Commission

of Standardization of Materials). This organization is the official government agency which has the responsibility for giving approval to the IRAM standards. IRAM acts as the technical organization for preparing standards; the Commission acts as the official body to approve the standards and see that they are actually put into practice.



The American Gas Association Testing Laboratory tests temperature limit controls for gas ovens

New Gas Equipment Standards Cover Gas Ovens and Furnace Controls

REMARKABLE progress in the development of American Standards for gas appliances and their accessories has been shown during recent years in constant revision of existing requirements and initiation of new specifications covering additional types of equipment. This in turn has been accompanied by wide and far-reaching benefits to consumers and to the American gas industry which has been responsible for their preparation.

On May 12, 1941, two new sets of American Standards covering portable gas baking and roasting ovens (Z21.23-1941) and furnace temperature limit controls and fan controls (Z21.29-1941) were adopted by the American Standards Association as American Standard. Recommended revisions to requirements for semi-rigid gas appliance tubing and fittings (Z21.24-1941) were also adopted at this time. All become effective on January 1, 1942.

Adoption of these two new American Standards brings the total number of different types of gas equipment so covered to 41. Practically every gas appliance for every domestic heating use is included, in addition to a number of commonly used commercial types.

Constant expansion and revision of gas-appliance standards benefit consumers

American Standards now cover 41 different types of gas equipment

by
R. M. Conner

*Director, American Gas Association
Testing Laboratories*

Sponsored by the American Gas Association, this standardization program is in keeping with early efforts of the gas industry to insure its consumers that gas equipment they purchase will be safe, durably and substantially constructed, and capable of efficient and economical operation. It is further enhanced by a rigorous testing, certification and inspection service established at the American Gas Association Testing Laboratories in

Cleveland, Ohio, and Los Angeles, California. Equipment which conforms in every detail with current applicable American Standards is awarded the trade-marked Laboratories Approval Seal or Listing Symbol. Perhaps no index better reflects the achievements of this program than that today more than 95% of all domestic gas appliances offered for sale in the United States and Canada display the Laboratories Approval Seal as evidence that they have been tested and approved. Consumers have long realized from satisfactory experience with appliances so marked that this symbol constitutes a reliable and authoritative national guide in selecting such equipment for their use.

Gives Constant Inspection Service

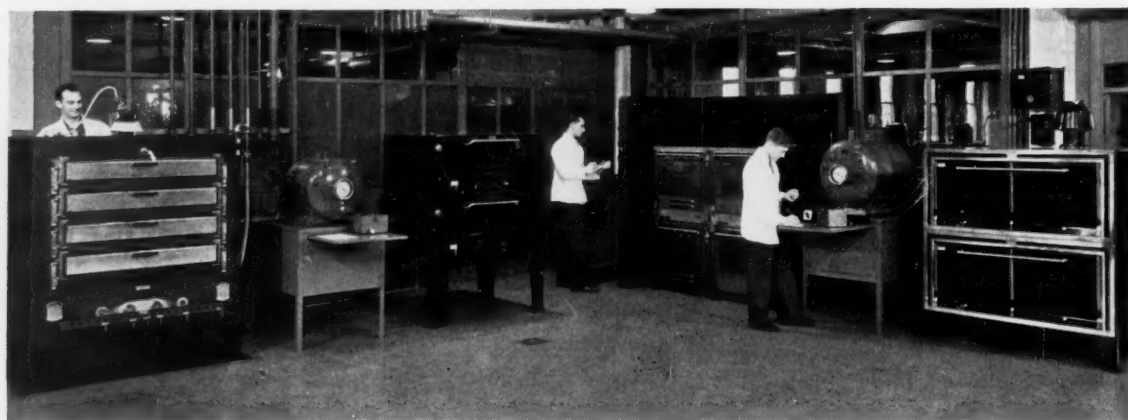
The Laboratories' work, however, does not stop with certification alone. A constant inspection service is conducted by their representatives in manufacturers' plants, dealers' and jobbers' warehouses and sales floors to insure that construction of current production agrees exactly with that of samples originally approved. In recent years, these inspections have also been conducted in increasing numbers in consumers' homes, thus affording opportunities to check proper installation and adjustment of gas equipment as well as its construction.

An additional consumer guide in selecting tested and approved gas appliances is available through the Laboratories' Directory of Approved Gas Appliances and Listed Accessories. This Directory is brought up to date quarterly and supplements are published during the intervening months. The April, 1941, quarterly issue is the largest ever published and lists more than 17,000 individual models. If all variations, such as trim, color, and

other details were counted, this list would exceed many times this number. The pamphlet constitutes an authoritative guide for all interested in the purchase and sale of gas-burning equipment and is widely circulated among utility companies, manufacturers, distributors, and retailers. As new standards become available, such as those for gas-fired baking ovens and limit controls, these appliances and accessories are certified and included in the Directory. Its size and scope is thus constantly increasing.

Requirements for portable gas baking and roasting ovens were prepared as a result of numerous requests from the industry for the development of suitable construction and performance standards to cover ovens of this type. As their title implies, they apply to ovens, normally used in hotel, restaurant, and commercial baking establishments, and are movable from place to place as a unit. They include cabinet and sectional type ovens, both of which have stationary decks. In addition to embodiment of specifications covering durable and substantial construction, tests to insure safe and efficient operation for use with city gases, liquefied petroleum, and butane-air gases are provided. All are designed to approximate as closely as possible conditions of actual usage which such ovens will be called on to meet.

Of particular interest to consumers are the tests conducted to insure uniformity of oven temperature and satisfactory baking. Temperatures as measured in the oven must not vary by more than 15 F from an average. Two actual baking operations are conducted. Cookies baked at 375 F must be evenly browned in not more than 11 minutes. Similarly, vanilla layer cakes distributed in the oven must be evenly browned and uniformly baked at 375 F in not more than



Research on baking and roasting ovens carried out at the AGA Laboratories helps the technical committees in setting up standard requirements

30 minutes. In both instances, recipes for cookie and cake batters employed are those developed by studies of the American Home Economics Association and the U.S. Bureau of Home Economics. Additional tests cover such features as speed of heating an oven to baking temperature and the maximum gas consumption required to maintain it. Throughout, the same high standards of safety, durability, and efficiency applicable to other types of gas equipment are specified.

Increasing Use of Gas-fired Furnaces Shows Need for Standards

Need for adequate standards for commonly used controls for modern gas-fired central house-heating furnaces became evident some time ago in view of rapidly extended use of such equipment, together with the increasing demand for its complete automatic operation. American Standard Listing Requirements for Furnace Temperature Limit Controls and Fan Controls, Z21.29-1941, are the first of a series of proposed requirements for devices of this general nature to be prepared and adopted as American Standard. They apply to temperature limiting devices operating by mechanical or electrical means to limit outlet air temperature of central-heating gas appliances and to thermostatic fan control devices regulating forced-air flow. They apply only to those devices actuated by bonnet air temperature and do not include room thermostats, bonnet air temperature over run switches, or time delay relay switches.

Since both furnace limit controls and fan controls are actuating elements for main gas-control valves, they must, when incorporating gas-carrying parts, comply with applicable provisions of American Standard Listing Requirements for Automatic Main Gas-Control Valves, Z21.21-1935. Where electrical equipment or wiring is employed, applicable requirements of the National Electrical Code must be met. In addition, electrically operated controls must be capable of satisfactory performance when the primary voltage is varied plus or minus 15 per cent from the rated voltage. For laboratory testing of these devices, a duct specially designed for the purpose is employed. Suitable tests are imposed to insure satisfactory operation under conditions such as will be encountered when installed in customers' homes. Furthermore, continued operation tests are conducted to insure ability to withstand long periods of usage. It will thus be seen that availability of limit and fan controls certified for compliance with these new standards will greatly assist manufacturers in selecting such products best suited for their individual needs.

Revisions to American Standard Listing Requirements for Semi-Rigid Gas Appliance Tubing and Fittings incorporate a number of important

Franklin Institute Honors Conner For Work on Standards

R. M. Conner has been selected this year to receive the Walton Clark Medal, presented by the Franklin Institute in Philadelphia to workers in science and industry whose contributions to public welfare merit special commendation.

Mr. Conner has been director of the Gas Appliance Testing Laboratory of the American Gas Association since its foundation in 1925. In announcing his selection as recipient of the medal this year, the Institute calls attention to the notable work which has been accomplished by the Laboratory under his direction. "Three primary points of view have been kept in mind in this work," the Institute states. "They cover minimum requirements for satisfactory performance, substantial and durable construction, and safe operation. Some idea of the amount of work which must be undertaken may be gained from the fact that approval of a domestic range required 250 separate tests.

"As a result of 15 years work, 27 American Standards have been developed covering ranges, central heating plants, water heaters, space heaters, and refrigerators, and more than 17,000 different models of appliances have been listed on their approved list. Very important research work has also been undertaken by the staff of the laboratory in technical questions involved in the utilization of gas."

changes. Parts I and II now cover construction requirements for such parts used as gas conduits on appliances. Tubing and fittings for connection of gas appliances to house piping are separately covered in Parts III and IV in view of differences presented in their application. In all cases tests applied have been designed to more nearly reproduce conditions which tubing and fittings must withstand in service. Full recognition has been given in the preparation of these revisions to the increasing use of such parts in installation of

domestic appliances. In fact, the ease and convenience which they afford is becoming more and more generally accepted.

While these three sets of standards do not become effective until January 1, 1942, manufacturers desiring to do so may submit their products for test under them in advance of that date. Certificates of Approval or Listing for equipment complying with standards not yet in effect are

dated as of the effective date of such standards. In many instances, therefore, manufacturers will no doubt wish to take advantage of this ruling. In any event, it is expected that a considerable amount of equipment heretofore not included in the American Gas Association testing and certification program will shortly become available to consumers of gas through the availability of these new requirements.

Committee on Outdoor Signs Elects Hall Chairman, Hurd Secretary

The ASA Sectional Committee on Building Code Requirements for Signs and Outdoor Display Structures (A60) held its organization meeting May 14, and elected Albert H. Hall as its chairman. Mr. Hall represents the American Municipal Association on the committee. William F. Hurd, Outdoor Advertising Association of America, was elected secretary.

The scope of the work to be undertaken by the committee was defined as covering erection and maintenance requirements to assure safety in construction, size, and attachment or anchorage for permanent and temporary signs and outdoor display structures. The committee's work will not, however, cover appearance and geographical location of outdoor signs.

The committee studied a draft standard which had been prepared by the Outdoor Advertising Association of America. It was decided that a second draft will be prepared on the basis of suggestions made at the meeting, and will be considered by the committee at a meeting to be scheduled late in the summer.

Recommendations on stresses and on wind loads included in the draft standard will be taken up by the committee first in order that they can be correlated with the work of the ASA Advisory Committee on Working Stresses and the Committee on Building Code Requirements for Minimum Design Loads in Buildings (A58).

Federal Bills for Container Sizes Are Now Being Prepared

Carrying out the recommendations of the National Conference on Weights and Measures in June, 1940, Federal bills are in preparation to standardize carton and other package sizes. Alex Pisciotta, director of the Bureau of Weights and Measures of New York City, announced at the packaging conference of the American Management Association April 2. Members of the packaging industry were not entirely favorable in

their comments, it was announced following the meeting, indicating that they believe it to be an inopportune time to introduce legislation. Application of specific standards, they declared, would involve millions of dollars in changes in expensive packaging equipment at a time when the machine tool and equipment makers are tied up with defense orders.

The bills being prepared, Mr. Pisciotta explained, cover standard packaging of dry staple food products, standardized packing of edible oils and syrups, and standardization of canned fruits and vegetables and their juices.

The bills were recommended by the Committee on Standardization of Packaged Goods of the National Conference on Weights and Measures which after studying the problem concluded that present practice leads to fraud, deception, and unfair competition and that quantities of all commodities sold in packages or containers should be standardized.

Warwick and Harriman Head New OPM Purchasing Branch

C. L. Warwick, secretary of the American Society for Testing Materials, and N. F. Harriman, Procurement Division, U. S. Treasury Department, have been named to head the government conservation branch of the purchases division, Office of Production Management. The conservation branch is one of three new branches established this month by Donald M. Nelson, director of the OPM purchases division. It will review specifications to see that scarce materials are conserved in every way possible in buying for the government.

The other two branches just established are the motor transport branch and the merchandising statistics branch. A. B. Bassi of the Socony Oil Company, Chicago, has been named to head the first, working with the Quartermaster Corps in the operation of the corps' fleet of about 200,000 trucks. Amos Parrish, president of Amos Parrish & Company, New York, heads the statistics branch, which will coordinate government purchasing with industrial operations.

TNEC Surveys Government and Industry Programs for Consumer Goods Standards

Consumer Standards. By S. P. Kaidanovsky, assisted by Alice L. Edwards. Monograph No. 24, printed for the Temporary National Economic Committee; 433 pp.; Government Printing Office, Washington, D. C.; \$1.00.

A DETAILED description of the work on standards of 46 agencies of the Federal Government is contained in the recently published study of Consumer Standards, prepared by S. P. Kaidanovsky, technical director of the Consumer Standards Project of the U. S. Department of Agriculture, with the assistance of Dr. Alice L. Edwards. The monograph is No. 24 in the series which is now being published by the Temporary National Economic Committee as a part of its investigations.

The monograph does not confine its study to consumer goods alone but represents the most complete treatment available of standardization as it is being carried out by the Federal Government. It brings together for the first time the facts concerning Federal activities in standardization, inspection and testing of consumer goods, including consideration of research activities as a basis for standards.

The standards work of bureaus in seven of the ten regular departments and in all three of the new "agencies"—the Federal Security Agency, the Federal Works Agency, and the Federal Loan Agency—is included, as well as that of some independent establishments, such as the Federal Trade Commission, the Government Printing Office, and the Tariff Commission. In addition to describing the work of the larger and better known agencies, such as the National Bureau of Standards, the Agricultural Marketing Service, and the Food and Drug Administration, for example, it also includes many which might not generally be thought of as concerned with standardization. The Extension Service of the U. S. Department of Agriculture, the Bureau of Animal Industry, the Forest Service, the Federal Housing Administration, the Geological Survey, and the Children's Bureau are a few in this latter group.

Some of these agencies issue mandatory standards, such as those of the Food and Drug Administration on labeling, and those of the Federal

Comprehensive report on standardization activities of the Federal Government also shows how trade and technical associations are carrying on standards programs and analyzes value of standards to consumers

Charts and tables illustrate how programs are set up and how standards are developed and used

by P. G. Agnew

Secretary, American Standards Association

Trade Commission in connection with advertising. Others issue only permissive standards, and some, the Agricultural Marketing Service, for one, issue both. It is illegal, for example, to ship wheat or cotton across a state line with any grade designation other than the official one. United States Standards of quality, some mandatory and others permissive, have been developed by the Agricultural Marketing Service for nearly all the important agricultural commodities produced in this country. Among the many interesting charts and tables in the monograph is a series of seven charts giving detailed information on grade designations for all kinds of food products as promulgated by the various Federal agencies.

Chapters on similar standards activities being carried on by private agencies are also included in the monograph, but the emphasis of the entire report is on the standardization activities of the Government agencies.

In addition to the Federal Government, one chapter describes the standardization activities of technical and trade associations and the American Standards Association. Another describes

State legislation as it affects standardization and simplification of products. Quality standards and labeling requirements are embodied to some extent in State legislation. Several types of State laws contain these requirements, for example, a general "food and drug" law; separate laws governing special types of foods or drugs, for example, meat, dairy products, eggs, fruits and vegetables, poisons and narcotics; laws governing a variety of consumer goods that are neither foods nor drugs, for example, gasoline and oil, fertilizer, seeds, insecticides, gold, silver, and platinum articles, bedding and upholstery, and a few others. Some State laws are concerned with labeling requirements only, some with quality standards, and others with both. There is a great deal of variation among these laws. Not only do they differ as to stringency of regulation, but even those which impose approximately the same degree of regulation do so in different ways.

Examples Show Need for Standards

In this chapter two examples show the variety of these State laws and methods of bringing about uniformity. One of these examples has to do with fertilizers, and illustrates a field in which the interest and concern of the U. S. Department of Agriculture was instrumental in promoting a coordinated program for standardization through the Association of Official Agricultural Chemists. This organization, made up of those State and Federal officials who are engaged in agricultural research or in the enforcement of the feed, fertilizer, and food control laws, adopts definitions for the various fertilizer terms, establishes standards for various fertilizer materials, and makes official interpretations of terms and phrases used in the industry. The laws of many states provide that the methods of analysis and the recommendations of this association shall govern the practice of the control officials, in which case these methods and interpretations have the effect of law. Up to and including 1939, 60 fertilizer and liming materials have been officially defined by name and identified by specifications, and 28 terms have been officially defined or interpreted.

In the second example, bedding and upholstery, conflicting state regulations make for widespread confusion. Voluntary cooperation between all groups concerned is in its early stages in this field. It centers in a sectional committee organized under the procedure of the American Standards Association, which brings together representatives of manufacturers, retailers, consumers, and State officials. The cooperation of all of these groups through the machinery of the American Standards Association is expected to result in uniform state bedding regulations, and greater

standardization in the bedding and upholstery industry.

Descriptions of procurement and purchasing methods in different branches of the government are given one entire chapter. The standards program of the United States Treasury Department, which has responsibility for the preparation of Federal Specifications and of all general Government purchasing, the United States Navy Department, and the United States War Department are described in detail. In addition, state, county, and municipal purchasing methods and procedures are described. Interestingly enough, the monograph reports that one-third of the cities replying to the TNEC request for information reported that they make considerable use of written specifications in purchasing, and 70 per cent of the counties replying or one-fifth of the 3,070 in the country make some use of specifications. It is evident, however, that they do not do as good a job of purchasing on standards and specifications as do the states and cities. Of the 42 states replying to the TNEC questionnaire, 38 states reported centralized purchasing. Of these, seven states use written specifications exclusively, six use written specifications in most cases, while 24 use trade-names and specifications. In making their purchases, 13 states reported that they use specifications of the Federal Government or of the national trade or technical associations extensively.

44 Tables and Charts Illustrate Report

Twenty-four tables and 20 charts show how the work of the various Government and association groups as it touches standardization is organized and carried out. The charts show in detail how the Federal Government is organized in connection with standardization, how quality standards for farm products are developed, how Simplified Practice Recommendations and Commercial Standards are developed, and the procedure followed by other Government groups in setting up standards. They also show how the American Society for Testing Materials works, and include three charts touching the work of the American Standards Association. One of these shows the development of gas-appliance standards by the American Gas Association and their final approval by the American Standards Association; another shows the organization of the American Standards Association; and the third shows how American Standards are developed.

A table summarizing the standardization activities of the Federal Government is reproduced on the opposite page.

The effect of standards on consumer buying and the value of standards, grades, and informative labels to consumers, particularly in economical purchasing and in reducing the time and

Standards Activities of Federal Agencies

The numbered columns indicate that these Federal agencies carry out the following activities connected with standards:

1. Establish standards used by others
2. Establish standards for own use
3. Establish standards as basis for loans
4. Research or operations provide basis for standards
5. Check commodities in commerce for compliance
6. Use standards of others in own activities
7. Maintain grading or inspection service
8. Check supplies or equipment against standards for purchases, loans, etc.
9. Establish test methods
10. Further the use of standards

Agencies	Activities									
	1	2	3	4	5	6	7	8	9	10
Agriculture Department:										
Agricultural Adjustment Administration.....						X				
Agricultural Economics.....				X	X	X				
Agricultural Marketing Service.....	X	X		X	X	X			X	X
Animal Industry.....	X	X		X	X				X	X
Chemistry & Engineering.....				X					X	
Commodity Exchange.....						X				
Consumers' Counsel.....				X						X
Consumer Standards Project.....						X				X
Crop Insurance Corporation.....				X	X				X	
Dairy Industry.....				X					X	
Entomology.....	X	X		X	X		X		X	X
Extension Service.....				X					X	X
Farm Security.....			X						X	X
Forest Service.....				X		X			X	X
Home Economics.....				X		X		X	X	X
Office of Experiment Stations.....				X					X	X
Plant Industry.....	X			X					X	
Rural Electrification.....	X		X	X				X		X
Soil Conservation Service.....		X								
Surplus Marketing Administration.....						X				
Technical Advisory Board.....		X				X				
Central Housing Committee.....	X			X					X	X
Commerce Department:										
Bureau of Standards.....	X	X		X		X		X	X	X
Federal Alcohol Administration.....	X	X			X					
Federal Loan Agency:										
Federal Housing Administration.....	X		X	X		X		X		X
Home Owners' Loan Corporation.....	X		X	X		X		X		
Federal Security Agency:										
Food & Drug Administration.....	X	X		X	X	X	X		X	X
Home Economics Education Service.....				X	X				X	X
Public Health Service.....	X	X		X	X		X		X	X
Federal Trade Commission.....		X			X					X
Federal Works Agency:										
Housing Authority.....	X		X	X		X		X		X
Government Printing Office.....	X	X		X		X			X	X
Interior Department:										
Bituminous Coal Division & Consumers' Counsel.....										X
Bureau of Mines.....				X		X			X	X
Fish & Wildlife Service.....				X					X	X
Geological Survey.....				X					X	
Indian Arts & Crafts Board.....										X
Office of Indian Affairs.....		X				X		X		
Labor Department:										
Bureau of Labor Statistics.....		X								
Children's Bureau.....				X						
Navy Department.....		X		X		X		X	X	
Tariff Commission.....				X						
Treasury Department:										
Procurement Division.....	X	X				X		X		
Veterans' Administration.....		X				X				
War Department.....		X		X		X		X	X	

energy required in shopping, is discussed in detail in two chapters prepared by Dr. Edwards. Obstacles and difficulties in the development and use of consumer standards are also pointed out, including lack of adequate means of guaranteeing compliance of commodities with approved standards, inadequacy of many standards, grades, and labels, and confusion in the terminology used.

The final two chapters give a summary of recommendations and policies of various organizations relating to consumer standards, grading, and labeling, and also a chapter of conclusions.

"Most desirable standards, grades, and informative labels have been developed through a certain amount of cooperation by interested groups," the monograph concludes. "Experience tends to demonstrate that there are a few significant fac-

tors which need to be observed in such activities if standards, grades, and informative labels are to be well adapted for the purposes they are designed to serve: There should be a fair representation of all substantially interested groups; full and objective consideration should be given to all pertinent data and situations; provisions should be made to safeguard the soundness of standards before they are approved; participants should be willing to first consider the simple or less controversial factors in developing a standard; an adequate educational program should be planned to promote the development of a suitable standard and its use when adopted; and finally, provision needs to be made for revision of a standard when experience and technological developments indicate the need for such a revision."

Manufacturers Tell of Benefits From Grade Labeling

INCREASED sales, better control of quality, improved employee morale, and improvement in sanitary conditions are a few of the benefits claimed by canning companies which have been operating during the past year under the continuous inspection and grading program of the Agricultural Marketing Service.

The canners' enthusiastic reactions to the U.S. grade A-B-C labeling were expressed in a symposium and survey just published by *Food Industries*. All agreed that the U.S. grades had given them a competitive advantage in the market, and had resulted in a noticeable increase in sales. "It is significant," *Business Week* remarks in commenting on the report, "that none of the canners has discontinued the service this year, and at least two canners have completely discontinued the use of warehouses, for the demand for their goods has been so brisk that they have moved direct from cannery to freight car."

Increases Orders

On this point, the General Manager of Cherry Growers, Inc., Traverse City, Michigan, declares, "We have evidence to show that some jobbers have increased their usual requirements due to our U.S. Grade A Fancy markings on the label. We believe also that the AMS shields on our labels are slowly extending our area of distribution."

"Buyers haggle less on the price of canned foods packed under AMS than on other canned foods," says Perry Myers, president and treasurer, Wegner Canning Company, Eustis, Florida. As an example he cites the case of a buyer who bought a car of U.S. Grade A citrus fruit juices, packed under the Wegner Company's own label. Soon after, the buyer called for quotations on three additional cars, asking for a price-shading on the quantity purchase. "We had to inform him," Mr. Myers states, "that we had ample market for our products and wouldn't change the price from that of the first purchase. Much to our surprise, he ordered the three cars shipped at our price—grumbling, but admitting he had to have the merchandise."

Schuckle & Company, Inc. of Sunnyvale, California, finds that U.S. grade labeling has definite trade appeal, and that as a result new buyers are expressing interest in the whole line rather than in individual items.

As in other fields where manufacturers have found that the use of standards helps in maintaining quality of product and in selling on a quality basis rather than on price alone, so in the food canning field, canners using the standards of the Agricultural Marketing Service have found the same advantages.

Helps Meet Competition

Cherry Growers, Inc. of Traverse City, Michigan, the first canner to sign up for the continuous inspection service, reports it has found the service a great help in meeting competition, and in selling on a quality basis rather than on a price basis. "Our contention has always been," A. J. Rogers, general manager, declares, "that whenever a substandard or poor quality can of cherries is offered to the public, regardless of the canner who puts it up, it decreases the demand for canned cherries and injures the whole cherry canning industry." His company's selling problem, he explains, has been complicated by the fact that it has had limited resources with which to acquaint consumers or buyers with the quality of its pack. Buyers "have even been willing to accept a lower quality in order to buy at the lowest price offered by the trade," he declares. "The usual comeback to our statement of the quality of our cherries has often been 'how can you prove that your quality is better than so-and-so's?'"

"A number of years ago," Mr. Rogers continues, "a malicious rumor was spread throughout the trade that our pack was filled with pits. This rumor reached the bank which was financing our activities. Though this rumor was, for the

Surveys to determine consumer reaction to grade labeled canned goods, packed under government inspection, are now under way in eight cities. The Agricultural Marketing Service of the Department of Agriculture is sponsoring the surveys and Dr. Alice Edwards is in charge. It is expected that over 5,000,000 cases will be graded by government inspectors in 1941, more than twice the 1940 total.

most part, without any foundation, we believed it necessary to establish the unshakable confidence of everybody with whom we dealt. Therefore we applied for Federal inspection under what was then the Bureau of Agricultural Economics. Our entire pack that year was graded and certificates issued on each lot at a cost to us of less than \$2,000 for the entire pack.

"The result of this inspection proved that over 90 per cent of our pack graded U.S. Grade A Fancy. This not only validated our claims of quality, but was something which we wanted very much to merchandise to the trade—buyers and consumers alike."

It was not until the Agricultural Marketing Service continuous inspection service was made available to canners that the company was permitted to place this information on its labels, however.

The service is not only a help in selling the pack on the basis of quality but also in maintaining uniform quality during the canning process, the survey indicates. This control of quality may well be the most significant phase of the AMS grade labeling program, developments in industry recently seem to indicate.

"Evidence is coming to me daily," Miss Harriet Elliott, head of the Consumer Division in the Office of Price Administration and Civilian Supply, declared recently, "that in the effort to cooperate in maintaining stability of prices, manufacturers are holding to their price lines but are seeking adjustments in quality."

Grades Need Checking

It has been found recently that the quality of the product in canned goods labeled "Grade A", but not labeled under AMS, has in some cases not met the requirements for quality specified for U.S. Grade A. The magazine *Tide* recently had 72 cans of fruit and vegetables, which had been graded by distributors themselves, regraded according to government standards. Of 60 cans labeled and sold by the distributors as Grade A, only 27 measured up to Government standards for Grade A; 29 were rated as B; and four as C. On the other hand, of the 12 cans graded B by the distributors, three were given an A rating by the Government, and the other nine were rated B.

In April the Food and Drug Administration ordered its first seizures of canned goods labeled by canners and distributors as "Fancy" or "Grade A," on the ground that the products did not measure up to AMS standards for Grade A. These seizures are expected to bring the AMS standards before the courts. "If the courts uphold AMS standards as the legal measuring rod

On April 11, the President established by executive order the office of Price Administration and Civilian Supply. Headed by Leon Henderson, this agency is parallel to OPM. In addition to price control and other duties, this agency will "formulate programs designed to assure adequate standards for, and the most effective use of, consumer goods."

for products that are privately graded, grade-labeling proponents will receive their greatest boost," declares *Consumer Education*, published by the Stephens College Institute of Consumer Education. "But if AMS standards are not upheld, grade labeling as identification of a definite quality will be relatively meaningless."

In the AMS plants included in the *Food Industries* survey, control of quality is maintained constantly, the canners report.

This is substantiated by Paul Stanton, vice-president and general manager of the Florida Fruit Canners, Inc. "There exists, as a result of this service, an undeniably higher conception of quality among the workers," he states. "This higher concept is also shared by the consuming public, if reports from our sales outlets and from customer's study groups are to be accepted as a cross section of public opinion."

Results of the inspection service on employee morale have not been unfavorable, as some of the canning companies had expected. On the contrary, employees take pride in the inspection program and in increased efficiency, they report. Mr. Stanton remarks, "the fact that the plant is under AMS inspection has aroused a spirit of friendly competition in which workers' skill and effort is pitted against extremely high standards." The United States Products Corporation has had the same experience, declaring, "We have had decided evidence of increased efficiency during our operating season under AMS."

Sanitation Is Essential

Sanitation is an essential factor in AMS inspection. Investigators for *Food Industries* found that in AMS plants, floors, have been put into condition to be easily kept clean and sterile and that they are policed regularly. They must be washed at the end of each operation period. Equipment, too, must be washed at the end of each cycle.

The use of paint was found to be important in AMS inspected plants for efficiency as well as

sanitation, since it reflects light and improves working conditions. In the two Florida plants the magazine's investigators discovered that every surface of the inside of buildings where food was processed was painted. One plant used white paint, the other aluminum. The editor-investigator, using a light meter in the two plants he visited, found the light on the white rubber inspection belts and work tables registered 50 to 70 foot-candles, adequate light for "average sewing" or "fine assembly" according to the legend on the meter. In other plants, where meter readings were taken, the light at similar locations was frequently as low as five to 15 foot-candles, suitable only for "rough work" according to the legend on the meter and "inadequate for most tasks," he reports.

The AMS inspection covers fruits and vegetables as they enter the plant, foods in process, sanitation, and sterilization and pasteurization. The AMS then grades and certifies the quality of the finished product.

D. C. Kok, president of the United States Products Corporation, Ltd, San Jose, California, believes the effect of the AMS sanitation requirements to be among the most important to both producer and consumer. "The rules and regulations of the AMS, as far as plant sanitation is concerned," he declares, "are very strict. From that standpoint alone I consider it a great advantage for the consumer to know that in AMS inspected plants the last word in sanitation prevails . . . In general, the extremely sanitary condition the plant was in, and the improvements that were made upon the suggestion of AMS inspectors, lifted the morale of our workers quite substantially."

Canners must assume the entire cost of the AMS continuous inspection and grading service. This includes reimbursing the Agricultural Marketing Service for the salaries of factory inspectors and graders plus 25 per cent to cover administra-

tive overhead expenses. The cost of the service, in addition to the original cost of installing necessary sanitation facilities and plant equipment, Cherry Growers, Inc. found to be 0.25¢ per case of 24 No. 2 cans and 0.35¢ per case of 6 No. 10.

The *Food Industries* editor found that the plants he visited were endeavoring to produce the best possible quality rather than the minimum tolerated for the U.S. Grade A label and were attempting to build acceptance for their own brands. As a result they are attempting to improve technology in order to improve quality, he declares.

Results of the service have been so satisfactory, the companies report that at least one is planning to extend the inspection to a second plant. Seventeen companies are now signed up and 200 others have applied for the service. Lack of facilities on the part of AMS prevents their participating in the plan at the present time. Perry Myers, president and treasurer of the Wegner Canning Company, Eustis, Florida, says:

"We believe we are in the very front rank of the parade, because we believe that in time the entire canning industry will be compelled to adopt voluntarily the requirements of Federal continuous inspection and grading, not by the government through any regulatory act, but by competition which will derive its strength from the preference of the consumer. . . .

"Because of our satisfaction with results from our experience canning Florida citrus juices under AMS at Eustis, we asked AMS to give us the same service at our plant at Sodus, N.Y. We were turned down by the Agricultural Marketing Service.

"But we are going to have AMS inspection and grading at the Sodus plant nonetheless. For we are tearing down, rebuilding, re-equipping, and improving the plant sanitation. Whatever is necessary to meet AMS requirements we will do. That is what we think of AMS and its value in creating a bigger market for canned foods."

Coonley Will Discuss Cooperation At AIEE Convention

Howard Coonley, chairman of the Board of the Walworth Company, chairman of the ASA Advisory Committee, and chairman of the Board of the National Association of Manufacturers, will present the General Session address at the Summer Convention of the American Institute of Electrical Engineers. The convention is being held in Toronto June 16-20.

The theme for the general session is to be the broad subject of cooperative effort in support

of our system of free enterprise. Mr. Coonley was considered to be especially well qualified to speak on this subject as the result of his recent joint paper with Dr. P. G. Agnew, secretary of the American Standards Association, entitled "The Role of Standards in the System of Free Enterprise." The paper was published as Part 2 of the April issue of *INDUSTRIAL STANDARDIZATION*.

This paper, the AIEE announces, "suggests methods for cooperative progress in both social and engineering fields, which should be especially inspiring to engineers."

Federal Trade Commission Defines Good Housekeeping Guaranty

A "CEASE and desist" order issued by the Federal Trade Commission against the Hearst publications, particularly Good Housekeeping Magazine, in general prohibits practices which lead the public to believe that a product is being given an unlimited guaranty as to construction and performance when in fact the guaranty may be limited to construction alone. It also prohibits the use of the words "tested and approved" unless "the product has in fact been adequately and thoroughly tested in such a manner as to assure, at the time such product is sold to the consuming public, the quality, nature, and properties of such product in relation to the intended usage thereof and the fulfillment of the claims made therefor."

In effect, the Commission's order held that the buying public had been led to believe that the products carrying Good Housekeeping seals reading "Guaranteed by Good Housekeeping as advertised therein" were guaranteed by Good Housekeeping to meet all the advertised claims of per-

formance. This belief was fostered, the FTC indicated, by statements in the magazine itself reading, "It is the definite policy of Good Housekeeping to make its advertising pages trustworthy and reliable. Every product advertised in Good Housekeeping is guaranteed by us as advertised in our magazine." The FTC found, however, that in fact these guarantees were intended to apply only to the construction or chemical content of the product, and not its performance.

The order of the Federal Trade Commission expressly permits the use of the word "recommended" on a seal for an adequately tested product.

Warren C. Agry, publisher of Good Housekeeping Magazine, explains:

"The order permits Good Housekeeping to continue as it has for 40 years to issue its tested and approved seals, provided adequate and thorough tests of products coming within its testing scope are made so as to protect the buyer at the time of purchase."

Emergency Standard Outlines Tests For Accuracy of Engine Lathes

THE American Standards Association announces publication of a Defense Emergency Standard setting up requirements for Accuracy of Engine Lathes. Approved in May under the Association's new Emergency Procedure, it covers a key problem in the machine tool industry, since the lathe is one of the master tools of an industry whose accuracy is basic to the interchangeable manufacture of a vast number of parts of machines and munitions.

The new standard provides a series of 25 tests to be applied in checking engine lathes for accuracy. These include tests for bed level, tailstock way alignment, spindle center runout, cam action, lead screw alignment, and for turning round or cylindrical when mounted in chuck or between centers, etc. The accuracy requirements, stated in terms of maximum permissible variations apply to three groups of engine lathes: tool-room lathes; engine lathes, 12 to 18 in., inclusive; and engine lathes, 20 to 36 in., inclusive.

This standard was developed by the Engine Lathe Group of the National Machine Tool Builders Association; and has already proved its value in practice, for example in machine tool purchases made by the Government. The National

Machine Tool Builders Association submitted the standard to the American Standards Association for approval and asked that it be handled under the ASA Emergency Procedure to speed up its publication.

Copies of the new standard, Accuracy of Engine Lathes (B5.16-1941), are now available from the American Standards Association, 29 West 39th Street, New York City, at 25 cents per copy.

Drinking Water Standards To Be Brought Up-to-Date

Plans for the revision of drinking water standards were announced recently by Thomas Parran, Surgeon General of the U. S. Public Health Service. The present standards, first promulgated in 1914, and revised in 1925, will be revised to conform more closely to current requirements for water supplies, Mr. Parran announced. A special advisory committee has been appointed of representatives from federal, state, municipal, and scientific organizations to study the proposed revision.

BSI Increases Wire Tolerance As War Emergency Measure

As a war emergency measure, the British Standards Institution has increased the tolerance on the diameter of some of the wires listed in British Standard No. 7 and in related specifications for insulated cables and flexible cords. The extent to which the tolerance is widened—one ten-thousandths of an inch increase on the maximum allowable diameter in some cases, and an equal decrease on the minimum diameter in other cases—is not great enough to cause any practical difficulty to electrical engineers, announcement of the change declares, but is a help to manufacturers of the conductors.

Also as a war emergency measure, permission was given to manufacturers to use strandings from 6 per .012 in. to 65 per .012 in. instead of the strandings 14 per .0076 in. to 162 per .0076 in. which have been standard up to this time.

New Material Is Given in Standard On Cast-Iron Screwed Fittings

A revised edition of the American Standard for Cast-Iron Screwed Fittings, 125 and 250 Lb (B16d-1941) has been approved by the American Standards Association. The revision includes hydraulic service ratings, material specifications, tolerances on alignment, threading of fittings, and dimensions of some additional sizes. Tables of dimensions covering reducing couplings, caps, and close and open pattern return bends are also included.

The standard was recommended for the approval of the American Standards Association by the Heating, Piping and Air Conditioning Contractors National Association, the Manufacturers Standardization Society of the Valve and Fittings Industry, and the American Society of Mechanical Engineers.

Copies are now available at 40 cents each.

ASA Standards Activities

Approved Standards Available Since Publication of Our May Issue

- Safety Rules for the Installation and Maintenance of Electrical Supply Stations, Part 1 of the National Electrical Safety Code C2.1-1941 10¢
 - Safety Rules for the Installation and Maintenance of Electric Utilization Equipment, Part 3 of the National Electrical Safety Code C2.3-1941 15¢
 - Code for Electricity Meters (Revision of C12-1928) C12-1941 \$2.00
 - Methods of Testing Electrical Insulating Oils (Revision of C59.2-1937) C59.2-1941 25¢
 - Methods of Testing Molding Powders Used in Manufacturing Molded Electrical Insulators C59.10-1941 25¢
 - Specifications for Cotton Rubber-Lined Fire Hose for Public and Private Fire Department Use (Revision of L3-1935) L3.1-1941 25¢
 - Northern White Cedar Poles (Adv. of 05b1-1931) American Standard 05.1-1941 20¢
 - Western Red Cedar Poles (Adv. of 05c1-1931) American Standard 05.2-1941 20¢
 - Chestnut Poles (Adv. of 05d1-1931) American Standard 05.3-1941 20¢
 - Southern Pine Poles (Adv. of 05e1-1931) American Standard 05.4-1941 20¢
 - Lodgepole Pine Poles (Adv. of 05f1-1933) American Standard 05.5-1941 20¢
 - Douglas Fir Poles (Adv. of 05g1-1933) American Standard 05.6-1941 20¢
- ("Adv." indicates advancement from American Tentative Standard to American Standard.)

Standards Approved Since Publication of Our May Issue

- Building Code Requirements for Reinforced Gypsum Concrete A59.1-1941
- Reamers B5.14-1941
- Attachment Plugs and Receptacles C73-1941
- Specifications for Portable Steel and Wood Grandstands Z20.1-1941
- Listing Requirements for Semi-Rigid Gas Appliance Tubing and Fittings (Revision of Z21.24-1937) Z21.24-1941
- Approval Requirements for Portable Gas Baking and Roasting Ovens Z21.28-1941
- Listing Requirements for Furnace Temperature Limit Controls and Fan Controls Z21.29-1941

Standards Now Being Considered by Standards Council for ASA Approval

- Manhole Frames and Covers for Subsurface Structures A35.1
- Keyways for Holes in Gears B6.4
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